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# Arms Industries of the Middle East

Joe Stork



Aerospatiale Gazelle helicopter built under license in Egypt on display at a Cairo arms show in 1984.

Michael C. Dunn

**F**orty years ago, arms production in the Middle East was limited to a few small factories producing rifles and ammunition. Today, arms production has become a very big business in the region, with annual output worth more than \$4 billion and rising. Of the 23 Third World countries with extensive military production, five are in the Middle East. One Middle Eastern state, Israel, is the largest Third World arms exporter and has one of the largest arms industries in the world. Egypt and Turkey are the other two major arms producers in the region, followed by Iran and Pakistan. Munitions and small arms producers include Algeria, Ethiopia, Iraq, Jordan, Morocco, Saudi Arabia, Syria, Sudan and Tunisia.

The Middle East is not the only region of the world where military expenditures have soared and military industries grown considerably. But relative to population, militarization in the Middle East is especially pronounced. The region's geopolitical

importance and its oil resources have given rise to wars and threats of wars throughout the period since World War II.

Countries establish weapons industries for a variety of reasons. On the political side, regimes seek reduced dependence on outside suppliers, local prestige and regional status. Economically such enterprises may reduce foreign exchange needs, and contribute to the development of an industrial base. In fact, dependence on outside suppliers is only modified: few countries can reduce the import content of their military production below 30 percent.

Turkey, Egypt and Israel need to increase export earnings. Local arms production can replace arms imports and thus save on foreign exchange. Arms companies in the developed countries are ready to shift part of their production overseas to take advantage of cheaper labor costs and to gain access to local markets. Production is often licensed through foreign firms. Weapons systems designed domestically are usually modelled on systems previously imported. The US, UK, France, West Germany and Soviet Union account for some 85 percent of all licenses. Of these, the US has provided the most, the Soviet Union the least.

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## Egypt

Egyptian arms production dates back to the period of Muhammad Ali's rule in the 1820s. Comprehensive and of high quality, it included warships, artillery, rifles, bombs and ammunition. Both resources and market were strictly domestic. But under European pressure, facilities were disbanded in the 1840s.

Egypt began modern arms production after World War II with help from German, Swedish and French experts. The government built ammunition and small arms factories in the mid-1950s. An aircraft factory was set up at Helwan, near Cairo, in 1950 to produce primary trainers and prototypes of fighters, and the Helwan Engine Company was set up in 1960 to produce aircraft engines. The Sakr Factory for Developed Industries, set up in 1953 in Heliopolis, another Cairo suburb, was a munitions works which began to develop missiles in the 1960s. All of these efforts were based on imported technology. During the 1960s, Egyptian industry built several hundred aircraft; some were exported. But the Soviets, by then Egypt's main arms supplier, discouraged local arms production. The arms factories ran into financial difficulties and many had closed by the end of the 1960s. Apart from light arms manufacture, Egypt's military industry worked only on repair and maintenance of imported weapons.

Egypt broke its special relations with the Soviets after 1973 and turned to the West. The 1973 October War and the increase in oil prices spurred plans for expanded Egyptian military industries. So did the new economic program of *infitah*, with its goal of opening of the Egyptian economy to foreign companies and expanding exports. The Sadat regime proposed construction of a military-industrial complex called the Arab Organization of Industries (AOI). AOI was based on the idea that the Saudis and their partners would provide the capital; Washington, London and Paris would provide the technology and capital equipment; Egypt would contribute its four existing arms factories—the

aircraft and engine factories in Helwan, the Sakr munitions factory in Heliopolis and the Kader factory (aircraft and armor)—and some 15,000 trained workers. AOI was formally set up in 1975 and some assembly and licensing agreements were reached in 1977-78, but Saudi Arabia and the other Gulf states cut off funding in 1979 in response to the Egypt-Israel-US peace treaty. Egypt assumed total control of the consortium at that point, with credits from the US and France and some money from arms exports. Since 1984, there have been reports of renewed Saudi funding.

AOI annual production was about \$100 million in the early 1980s. Most of this output was for Egyptian forces, though Egypt exports to Iraq and some other Arab and African states as well. Military Production Industries (MPI) is a government-run arms complex under the Defense Ministry that is separate from AOI. MPI has 15 factories, mainly in Cairo's suburbs. Its \$240 million annual output of small arms and ammunition is mostly for local use. Together the two consortia oversee 24 factories and have a labor force of between 70,000 and 100,000.

AOI projects have built up the Egyptian aerospace industry. Between 1982 and 1985, the Helwan plant assembled some 37 French Alpha jets with almost half local components including flaps, rudders, tailcones and some avionics. Helwan is now assembling Chinese F-7 (MiG-21) fighters, and is beginning to assemble Mirage 2000 fighters. The Kader factory, perhaps with Saudi financing, is producing 110 Brazilian EMB-312 Tucano trainers, 80 of them for Iraq. The new privately-financed Arab-British Helicopter Company is assembling two or three Gazelle light helicopters per month, and Aerospatiale has also agreed to provide technology for assembly of the Super Puma helicopter. Three factories at Helwan assemble, repair and overhaul aircraft engines. Benha Electronics Factory, in a co-production arrangement with Westinghouse, is assembling radar systems. It has a work force of 3,000 and annual turnover of E£70 million.

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The Nile 23 air defense system, designed and built in Egypt, combines a US M-113 vehicle, French radar and guidance and Soviet-designed anti-aircraft guns and surface-to-air missiles.



Egypt designed and developed the Walid armored personnel carrier in the 1960s. A new version, the Fahd, came off the assembly lines in 1984 and several Arab states have placed orders. General Dynamics, the US firm, won a contract in 1984 to build a tank factory outside Cairo. US and British firms have competed for contracts supplying tools for upgrading Soviet artillery. In 1982, Egypt sold Iraq \$1 billion worth of refurbished Soviet military hardware, and the arms trade to Iraq has remained brisk.

Egypt currently assembles the British Swingfire anti-tank missile, and versions of the Soviet SA-7 and SA-2 portable surface-to-air missiles, as well as several kinds of air-to-air and air-to-ground missiles. These missiles are mostly built at the Sakr works. Egyptian factories are also turning out increasing quantities of guns and ammunition, some for export. And they are producing military electronics such as radios and telecommunications. France is Egypt's major partner in developing more sophisticated assembly and production facilities. According to one French executive, "Egypt has become a profitable relay between France and the other countries in the region."

At a time of declining foreign exchange revenues, Egypt is counting on increasing its arms exports. Since Iraq takes two-thirds of Egypt's military exports, an end to the Gulf War could affect Cairo's export plans significantly. Egypt also needs to increase arms exports to make its military industries cost-effective. Gamal al-Sayyid Ibrahim, Minister of State for Military Production, discussing which main battle tank Egypt might assemble, remarked that the choice would not only have to meet Egyptian army requirements but would also have "to satisfy the market around us." Apart from Iraq, some of Egypt's main clients have been Somalia, Oman, Sudan and North Yemen. Shipments to these countries, including Chinese jet fighters and Soviet and US tanks, have been financed by Saudi Arabia and Kuwait. Other important customers have been the Afghan *mujahidin* and the Washington-backed forces of Hissene Habre in Chad.

## Iran

Iran is a textbook case of a country whose small industrial base and determination to acquire state-of-the-art weaponry combined to insure that it would remain overwhelmingly dependent on foreign manufacturers. With the exception of some aircraft assembly begun in the 1930s and terminated with the outbreak of World War II, Iran has imported most of its weapons from the United States.

Iranian production of small arms and explosives dates back to the 1920s. An ammunition factory at Parchin, in the north of the country, has operated continuously for more than 50 years. By the late 1970s the Royal Armaments Factories in Tehran were manufacturing a wide variety of small arms, including basic infantry rifles and machine guns. Today the production of these and other plants supply Iranian forces in the war with Iraq.

When the shah decided to expand Iran's military might, he emphasized the air force. In 1969, the parliament obliged by decreeing that a portion of the country's oil revenues be put in a fund for arms imports. In 1970 the shah established Iran Aircraft Industries (IACI) as a joint venture with Northrop. A repair facility for US-made missiles also was set up at Shiraz.

Between 1970 and 1974, the military's share in total capital expenditures in the country rose from 25 percent to 41 percent of

the total, and many different industrial sectors—automotive, chemical, mechanical—had some military dimension to them. A huge military-industrial complex was begun near Isfahan, and by 1978 spare parts for tanks and helicopters were being manufactured there. The Military Industries Organization was the single largest importer of machine tools in the mid-1970s.

Iran's sizeable automobile assembly industry had a military component. Three foreign auto licensors, Jeep (US), British Leyland (UK, maker of the Land Rover) and Daimler-Benz (West Germany) manufactured military vehicles. While tank maintenance and repairs remained a completely military project, the private sector took on the production and repair of military vehicles. In small arms production, French, German and Swedish companies licensed factories owned by Iranian entrepreneurs.

The purchase agreements made by the shah's government for advanced weapons systems usually included provision of repair facilities and training programs for Iranian technicians. Most of these operations involved replacing rather than repairing defective parts. The IACI experience illustrates the limits of these measures. In 1975, the Iranian government bought out Northrop, and then contracted with Lockheed and General Electric for similar services. By 1977, IACI had a workforce of 2,600 in five Iranian cities. Three-quarters of these were Iranians, but they were concentrated in management and unskilled jobs. At the core of IACI were some 600 skilled workers from Pakistan, South Korea and the Philippines and 50 technicians from the US.

Other repair and assembly contracts were extensions of sales contracts, giving multinational arms companies easy access to the Iranian market through these local subsidiaries. The Iranian state firms producing and repairing weapons were grouped under the Military Industries Organization and, one step removed, the War Ministry. Many of the same middlemen close to the Peacock Throne who profited handsomely on contracts for importing weapons also had financial interests in these enterprises.

At the time of the revolution in 1979, several of these different arms projects were incomplete. One was the Bell Helicopter joint venture in Isfahan to train 1500 pilots and 5000 mechanics and then to assemble a military transport helicopter. This was cancelled. The Islamic Republic has continued arms production at a reduced level, but the war with Iraq has been fought largely with imported weapons and ammunition. And the regime has no doubt extended and expanded the local maintenance and repair capacity begun under the shah.

## Israel

Israel's arms industry is the largest and most sophisticated outside the industrialized countries. It predates the state itself, with roots in the small arms and ammunition workshops that grew up in the 1930s and 1940s and eventually became Israeli Military Industries (IMI). Israeli Aircraft Industries (IAI) had its beginnings in the early 1950s.

Israeli arms manufacturing really took off after the 1967 war. The French arms embargo, combined with expanding political and economic clout of the Israeli military and US cooperation, helped make Israel's military-industrial establishment what it is today. There are close links between Israeli arms firms, the scientific and technical elite and the officer corps. As in the US, there is a "revolving door" through which former officers pass from staff positions in the armed forces to executive roles in the



IAI's Bedek Aviation Division putting new engines and avionics on old Fouga Magister trainers.

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arms companies. Military expenditures currently run about \$5 billion, approximately a third of Israel's gross domestic product (with approximately the same amount again going to repay foreign debts, most of them military). Over \$1 billion of this each year is spent on locally produced arms, of which about 25 percent reflects the cost of imported parts and licenses.

The US allows its foreign military assistance to be used for Israeli research and development and production of advanced weapons systems, such as the Merkava main battle tank and the Lavi advanced fighter-bomber. Arms manufacturing has become an important part of Israel's industrial sector, and employs some 60,000, more than one-fifth of the industrial workforce in the country. IAI (20,000 employees), IMI (15,000) and Tadiran (10,000) are Israel's three largest industrial firms. Metal products, machinery and electronics sectors (of which military production is an important part) were the fastest growing industrial sectors in the country in the 1970s—12 percent a year as against eight percent overall. Military sales abroad of around \$1 billion per year are critical to the country's balance of payments. Military production includes a large value-added component and is thus highly profitable. For some firms, such as Iscar Blades, some 90 percent of their market (including civilian goods) is overseas; for many, exports account for more than half their output.

The development of Israel's military industries moved from repair and maintenance to licensed production and finally local design and manufacture. Israel's close ties with advanced arms manufacturing countries, first France and then the United States, was key. Israeli engineers, for instance, were apparently involved in the original Mirage design work in France. In any case, their familiarity with the production process enabled IAI to procure or manufacture the necessary forgings and preformed parts. Israel's

first locally-produced warplane, the Kfir, had a Mirage-based airframe and the engine of an F-4 Phantom.

Maintenance and servicing is now part of Israeli military exports. IAI currently has a contract to service and upgrade US military helicopters in Europe, and many countries which import US or French weapons systems go to Israel for service contracts. Finally, Israel reconditions and re-exports surplus or outmoded IDF equipment from the US and France, and captured Soviet weapons.

Israel has developed a great ability to upgrade and retrofit imported weapons systems with the addition of locally-produced components. This "mix and match" capability is the most significant feature of the Israeli arms industry today. There is no question that US technology is a key feature of Israel's military might. It is difficult to imagine Israeli military industries as they are today without it. But Israel, because of its high state of military readiness and frequent use of weapons systems, has developed a relatively unique capacity to absorb available technology, build on it and produce modifications and even new systems—such as remotely-piloted vehicles (RPVs) which are not produced anywhere else.

At the head of Israeli military industries are the large government firms—IAI, IMI, Rafael, the Main Ordnance factory—which are usually the prime contractors. At a second level is an important group of joint ventures with foreign firms which provide technology and capital and in turn profit from Israel's relatively low-cost scientific and engineering workforce. General Telephone and Electronics, Control Data and Motorola are long-standing examples. Finally there are perhaps 150 small and highly-specialized Israeli firms which subcontract on weapons projects.



## Pakistan

Pakistan is the one other country in the Middle East besides Israel approaching nuclear weapons capability. Yet its production of conventional arms remains limited to infantry weapons, ammunition, small ships and one type of aircraft (on license from Saab). Over the last 10 years, the country has also constructed repair and maintenance facilities for French Mirage fighters and Chinese F-6s and tanks.

The arms production facilities constructed under British rule were in the territory that became India after independence. In the 1950s, Pakistan constructed the Pakistan Ordnance Factory. Pakistani military production increased after the 1965 war with India. Today the POF includes 14 separate factories in and around the city of Wah. This is a company town of 225,000 near Islamabad. Wah's Lord Mayor is General Talat Massoud, current chairman of the POF. The Wah complex manufactures a wide range of munitions and infantry weapons—mortars, recoilless rifles and anti-tank missiles. The POF employs between 30,000 and 50,000 and has an annual production capacity of more than \$400 million. It is the country's largest industrial enterprise.

The technology POF uses comes from various suppliers—West German, British, Swiss, American. Pakistan has access to Chinese technology, and through this the Soviet technology incorporated in Chinese weapons. POF-designed 100mm tank rounds are now competing on the world market for customers among the many Third World countries with Soviet and Chinese designed tanks. Some 15 percent of POF's production is for export, which earns more than \$30 million in foreign exchange.

In addition, there is the Pakistan Aeronautical Complex employing some 3500 Pakistanis and a team of Chinese supervisors. Both the Ordnance Factory and the Aeronautical Complex are directly under the Ministry of Defense. The Communication and Electronic industry at Haipur assembles communications equipment for the military.

Pakistan's largest military export is not its weapons but its soldiers. The country is probably the largest exporter of military personnel in the Third World. It supplies commanders, pilots and technicians to many Arab countries, especially in the Gulf, and to



On an assembly line of the Pakistan Ordnance Factory.

other countries as well. Pakistan has also offered its Mirage repair and maintenance facilities to other countries in the region, and invited these countries to invest in joint arms ventures.

China's growing military ties with the West are influencing Pakistan's arms industry. China has been Pakistan's backer against Soviet-backed India in the competition for influence in the subcontinent. The Chinese are building a plant in Pakistan to assemble their F-7 fighter. Both governments have approached the US for technology for this project. Chinese airframes will be fitted with US-built engines, avionics and weaponry. ■

Sources: Michael Brzoska and Thomas Ohlson, eds., *Arms Production in the Third World* (London: SIPRI, 1986); Ahron Klieman, "The Lion Has Yet to Soar," *Journal of Defense and Diplomacy* (August 1986); Ken Liberstein, "Egyptian Defense Industry: Ambitious Plans," *Journal of Defense and Diplomacy* (August 1986); Yoram Peri, "The Military-Industrial Complex," *Israel Economic and Business Review* (Jerusalem, 1985); Herbert Wulf, "Arms Production Capacity and Potential for 27 Third World Countries, 1984," in *World Armaments and Disarmament: SIPRI Yearbook 1985* (London: SIPRI, 1985).

## Building A Bomb

It seems paradoxical that a country like Pakistan may soon be able to produce a nuclear bomb, yet cannot produce conventional combat aircraft and missiles. Modern aircraft construction requires a developed industrial base and a market sufficiently large to keep unit costs low. It also requires a range and a concentration of skilled scientists.

Pakistan's nuclear program is the brainchild of less than a dozen scientists. Its end product, a small number of nuclear bombs, will not become obsolete in a few years or need the continuous high-tech upgrading required by combat aircraft, missiles and other modern armaments.

—Ömer Karasapan

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